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SYNOPSIS OF WOOD-ROTTING FUNGI ON SPRUCE IN NORTH AMERICA: II[1]

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SUMMARY

Ninety-nine species of wood-rotting basidiomycetes in the family Polyporaceae are reported to occur on eight species of North American spruces.

The first part of this series (Martin and Gilbertson, 1977) included keys to higher taxa and a synopsis of the Corticiaceae. Part II is a synopsis of the family Polyporaceae sensu stricto. In this restricted sense the polyporoid genera of the Hymenochaetaceae are excluded and will be treated in part III. *Ganoderma* is included although commonly placed in the family Ganodermataceae in recent literature.

The taxonomy of the Polyporaceae is currently in a state of flux due to efforts to determine natural generic groupings and a general move away from the practical but artificial Friesian system. As a result many genera have been proposed and the nomenclatural validity and taxonomic merit of all these taxa have yet to be elucidated. Recent workers who have made important contributions in this area are Donk (1960, 1974), W. B. Cooke (1960), Pegler (1966), and Ryvarden (1976). Ryvarden's manual for identification of Polyporaceae of North Europe probably best exemplifies current trends in polypore taxonomy. He recognizes 62 genera in a mycoflora that approximates that of North America. The genera reported in this synopsis of spruce-decaying polypores are, for the most part, also found in Ryvarden's work. A major difference is that we have utilized the artificial genus *Poria* to accommodate species with resupinate basidiocarps. We prefer to follow this expedient until the taxonomy of this difficult group is more

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firmly stabilized. More detailed information on pileate North American polypores can be found in Overholts (1953). Lowe (1966) has published a comprehensive treatment of the resupinates.

Species of spruce are denoted by numbers as follows: 1, *Picea breweriana*; 2, *P. engelmannii*; 3, *P. glauca*; 4, *P. mariana*; 5, *P. pungens*; 6, *P. rubens*; 7, *P. sitchensis*; 8, *P. chihuahuana*; 9, *Picea* sp.

Abbreviations designating geographical localities are AK, Alaska; AZ, Arizona; AT, Alberta; BC, British Columbia; CA, California; CO, Colorado; CH, Chihuahua; CT, Connecticut, ID, Idaho; MA, Massachusetts; MB, Manitoba; ME, Maine; MI, Michigan; MN, Minnesota; MT, Montana; NB, New Brunswick; NC, North Carolina; NF, Newfoundland; NH, New Hampshire; NM, New Mexico; NWT, Northwest Territories; NS, Nova Scotia; NY, New York; OR, Oregon; OT, Ontario; PA, Pennsylvania; PEI, Prince Edward Island; QB, Quebec; SK, Saskatchewan; SD, South Dakota; TN, Tennessee; UT, Utah; VT, Vermont; WA, Washington; WS, Wisconsin, WY, Wyoming, YT, Yukon Territory.

Family POLYPORACEAE

Key to the genera

1. Basidiocarps stipitate, sessile or effused-reflexed, sometimes resupinate at first 2
1. Basidiocarps typically resupinate at all stages of development (see also *Coriolellus*). . . *Poria* Pers. ex S.F. Gray
2. Basidiospores brown, truncate, with a pitted exospore . . . . . *Ganoderma* Karst.
2. Basidiospores hyaline, not with a pitted exospore 3
3. Basidiocarps annual, rarely reviving a second year 4
3. Basidiocarps perennial, tubes typically stratified . . . . . *Fomitopsis* Karst.
4. Hymenophore in form of united tubes, or sometimes becoming hydnaceous from splitting of tubes 5
4. Hymenophore in form of radial lamellae (See also *Hirschioporus laricinus*) . . . . . *Gloeophyllum* Karst.
5. Context tissue brown, bright colored, or whitish, if turning red in KOH solution then tissue bright colored 6
5. Context tissue brown, turning red to purplish in KOH solution . . . . . *Hapalopilus* Karst.

Hapalopilus nidulans (Fr.) Karst. Basidiocarps sessile, dimidiate, upper surface and pore surface yellowish brown; hyphal system dimitic, generative hyphae with clamps; basidiospores ovoid to ellipsoid, 3-4 x 2-3 µm. White rot on 2 in AZ.

6. Contextual generative hyphae septate, with or without clamps; cystidia absent or if present barely projecting and/or incrusted 7
6. Contextual hyphae simple-septate; large non-incrusted cystidia present . . . . . *Phaeolus* (Pat.) Pat.
7. Generative hyphae simple-septate (See also *Tyromyces mollis*). 8
7. Generative hyphae with clamps, sometimes difficult to find in some species with a dimitic hyphal system 9

8. Basidiocarps stipitate; upper surface yellowish to tan or purplish brown; pore surface whitish; basidiospores spiny, amyloid . . . . . *Bondarzewia* Sing.
8. Basidiocarps sessile or substipitate; upper surface orange; pore surface sulfur yellow; basidiospores smooth, not amyloid . . . . . *Laetiporus* Murr.

Laetiporus sulphureus (Bull. ex Fr.) Bond. et Sing. Basidiocarps often densely imbricate, bleaching to a white crumbly mass after weathering; contextual hyphae of two types, some thin- to thick-walled, aseptate, much branched and interlocking; others thin-walled, simple-septate, rarely branched; basidiospores ovoid to ellipsoid, 5-7.5 x 4-5 µm. Brown rot on 2 in BC, ID; 3 in BC, ME; 7 in AK, BC, OR, WA.

9. Basidiocarps centrally to laterally stipitate 10
9. Basidiocarps sessile or effused-reflexed 12
10. Basidiocarps fibrous to corky when dried 11
10. Basidiocarps hard and bone-like on drying . . . *Osteina* Donk

Osteina obducta (Berk.) Donk. Pileus circular, dimidiate, or spathulate; upper surface light buff to grayish; pore surface cream-colored to yellowish; basidiospores oblong-ellipsoid, 4-6 x 2-2.5 µm. Brown rot on 2 in CO; 7 in BC.

11. Basidiocarps usually consisting of a single pileus on an unbranched stipe . . . . . *Polyporus* Mich. ex Fr. emend Donk
11. Basidiocarps consisting of numerous small pilei on branches from a common stipe . . . . . *Polypilus* Karst.

Polypilus umbellatus (Pers. ex Fr.) Bond. et Sing. Basidiocarps whitish to grayish brown; pore surface white, drying yellowish; stem arising from an underground tuber-like sclerotium; hyphal system dimitic with branching skeletal hyphae; basidiospores cylindric-ellipsoid, 7-10 x 3-4 µm. On 2 in MT.

12. Upper surface of basidiocarps glabrous to hispid; basidiospores cylindric 13
12. Upper surface of basidiocarps coarsely radially fibrillose; basidiospores ovoid . . . . *Abortiporus* Murr.

Abortiporus borealis (Fr.) Sing. Basidiocarps sessile or substipitate, white when fresh, drying yellowish; context two-layered, upper layer thin, soft and floccose; lower layer fibrous and hardening; cystidia ventricose or fusoid, thick-walled above, thin-walled below; basidiospores 4.5-7 x 3.5-5 µm. White butt and root rot on 2 in AZ, BC, CO, ID, MT, OR; 3 in BC, MN, NB; 4 in MN; 6 in NB, NS, NY, TN, VT; 7 in AK, BC, OR; 9 in NB, NS.

13. Hyphal system monomitic although some hyphae may become thick-walled 14
13. Hyphal system dimitic or trimitic with distinct generative and skeletal hyphae 17
14. Pore surface of various colors but not smoky gray 15
14. Pore surface smoky gray . . . *Bjerkandera* Karst. emend. Murr.

Bjerkandera adusta (Willd. et Fr.) Karst. Basidiocarps sessile or effused-reflexed, usually imbricate, usually less than 1 cm thick; upper surface whitish or cinereous to smoke gray or pale tan; tramal tissue pale brownish in KOH; dark layer at base of tubes usually distinct; pores minute, 5-7 per mm; basidiospores short-cylindric, 5.5-5 x 2.5-3 µm. White rot on 2 in MT; 3 in BC, MN, YT; 7 in OR.

15. Context fibrous or corky, no gelatinous layer between tubes and upper context; associated with white or brown rots 16
15. Context with a gelatinous layer between tubes and upper context; associated with a white rot . . . . . *Gloeoporus* Mont.

Gloeoporus dichrous (Fr.) Bres. Basidiocarps sessile or effused-reflexed; often imbricate; upper surface gray to buff, zonate; margin ivory; pore surface pale to dark purplish; hyphae of lower context thin-walled; hyphae of upper context thick-walled; basidiospores allantoid, 4-6 x 1 µm. On 2 in MT; 6 in NY.

16. Contextual hyphae, tramal hyphae, and cystidia, if present, not amyloid . . . . . *Tyromyces* Karst.
16. Contextual hyphae, tramal hyphae, and cystidia amyloid, at least in part . . . . . *Amylocystis* Bond. et Sing.

Amylocystis lapponica (Rom.) Bond. et Sing. Basidiocarps sessile, whitish, becoming reddish brown on bruising or drying; upper surface often hispid; hyphae thin- to thick-walled; cystidia bottle-shaped or cylindric, frequently incrusted at the apex; basidiospores cylindric, 8-11 x 2.5-3.5 µm. Brown cubical rot on 2 in AT, AZ, BC, MT, UT; 3 in AT, BC, NH; 6 in NH; 7 in BC; 9 in AZ, BC, CO, WY.

17. Pore surface not purplish; cystidia absent or if present, not incrusted 18
17. Pore surface purplish when fresh; capitately incrusted cystidia present . . . . . *Hirschioporus* Donk
18. Pore surface exposed, volva not present 19
18. Pore surface enclosed in a volva with a small basal opening . . . . . *Cryptoporus* (Pk.) Shear

Cryptoporus volvatus (Pk.) Hubbard. Basidiocarps sessile, ungulate; upper surface cream colored to yellowish or tan, often coated with a clear lacquer-like layer; pore surface pale to dark chocolate brown; hyphal system trimitic; generative hyphae with irregular swellings; basidiospores cylindric, 9.5-12 x 3.5-4 µm. White rot on 2 in CO, MT, OR; 3 in AT, BC, MB, NWT, QB, OT; 7 in BC, OR, WA.

19. Context, upper surface, and pore surface of various colors but not reddish orange 20
19. Context, upper surface, and pore surface reddish orange . . . . . *Pycnoporus* Karst.

Pycnoporus cinnabarinus (Jacq. ex Fr.) Karst. Basidiocarps sessile or effused-reflexed, dimidiate to elongated; hyphal system trimitic; hyphal pegs abundant; basidiospores short-cylindric, straight or slightly curved, 6-8 x 2.5-3 µm. White rot on 2 in CT, ME, NH, NS, NY; 9 in NC, NY.

20. Pore surface white to cream colored or brownish; context thick or thin 21
20. Pore surface orange to pinkish; context thin . . . . . *Skeletocutis* Kotl. et Pouz.

Skeletocutis amorphus (Fr.) Kotl. et Pouz. Basidiocarps effused-reflexed to resupinate; upper surface grayish to light buff, tomentose to hirsute; margin usually undulate; hyphal system dimitic, generative hyphae becoming thick-walled; basidiospores allantoid, 3-4.5 x 0.5-1 µm. White rot on 2 in BC, ID, MT; 3 in BC; 7 in AK; 9 in AK, PA.

21. Skeletal hyphae not branching dendritically 22
21. Skeletal hyphae branching dendritically . . . *Dichomitus* D. Reid

Dichomitus squalens (Karst.) D. Reid. Basidiocarps usually effused-reflexed, often imbricate, upper surface white to pale reddish brown; pore surface white; hyphal system dimitic; basidiospores cylindric, 8-12 x 3-4 µm. White rot of 2 in AZ, CO, MT, NM; 3 in AK, MB, MN, NS, NWT, SK; 4 in MN, NB, NF, NY; 6 in CT, ME, NH, NY, VT; 7 in AK; 9 in OT.

22. Upper surface of basidiocarps of various shades of white, gray, yellowish, brownish or blackish, if reddish brown not becoming radially rugose 23
22. Upper surface of basidiocarps dark reddish brown and becoming radially rugose . . . . . *Ischnoderma* Karst.

Ischnoderma resinosum (Schrad. ex Fr.) Karst. Basidiocarps sessile or effused-reflexed, solitary or imbricate; pore surface cream colored to pinkish buff, turning darker brown where bruised; tubes separated from context by a thin, dark layer; hyphal system dimitic; basidiospores cylindric, often curved, 5-7 x 1.5-2 µm. White rot on 2 in ID, MT; 3 in BC; 6 in CT, ME, NH, NY; 7 in WA; 9 in NS, NY.

23. Pores typically daedaloid or sometimes lamellate 24
23. Pores circular to angular, not typically daedaloid 25
24. Basidiocarps sessile, dimidiate; upper surface grayish to brownish . . . . . *Daedaleopsis* Schroet.

Daedaleopsis confragosa (Bolt. ex Fr.) Schroet. Surface of pileus zonate; hyphal system trimitic; basidiospores cylindric, slightly curved, (6)8-11 x 2-3 µm, 2-3 guttulate. White rot on 9.

24. Basidiocarps thin, effused-reflexed; upper surface becoming blackish . . . . . *Datronia* Donk

Datronia mollis (Sommerf. ex Fr.) Donk. Surface of pileus often with irregular concentric zones, covered with a thin crust; margin

sharply delineated, more or less undulate; basidiospores cylindric, slightly curved, 8-10 x 2.5-3.5 µm. On 3 in AT.

25. Basidiocarps thin, coriaceous; upper surface tomentose to hirsute, usually zonate and sulcate; associated with a white rot . . . . . *Coriolus* Quél.
25. Basidiocarps thin to thick; upper surface not distinctly zonate and sulcate; associated with a brown or white rot . . 26
    26. Tissue white to brownish, if brown then pores more or less hexagonal; fresh basidiocarps and rot not with an anise odor 27
    26. Tissue brownish, pores circular or daedaloid; fresh basidiocarps and rot with an anise odor . . . . . *Osmoporus* Sing.

Osmoporus odoratus (Wulf. ex Fr.) Sing. Basidiocarps sessile or effused-reflexed; upper surface rusty brown, coarsely strigose to tomentose or darkening and glabrous with age; pore surface yellowish brown, pores 2-3 per mm; hyphal system dimitic; basidiospores cylindric, 9-13 x 3.5-5 µm. Brown rot on 3 in AK, YT; 9 in NB, NS.

27. Pores usually large, 1-5 per mm; associated with a brown rot . . . . . *Coriolellus* Murr.
27. Pores usually small, 4-10 per mm; associated with a white rot . . . . . *Tyromyces* Karst.

Key to species of *Bondarzewia*

1. Upper surface of basidiocarps yellowish to tan; basidiospores 7-8 x 6-7 µm

Bondarzewia berkeleyi (Fr.) Bond. et Sing. Basidiocarps with one to several pilei; upper surface often radiately rugose or pitted, sometimes obscurely zoned; pore surface whitish, discoloring on drying; pores unequal, sometimes lacerated or toothed. White rot on 7 in CA, BC.

1. Upper surface of basidiocarps purplish brown; basidiospores 6-7 x 5-6 µm

Bondarzewia montana (Quél.) Sing. Basidiocarps usually with a single pileus; upper surface covered with velvety pubescence; context white, spongy, drying hard; pore surface whitish, drying darker; pores 1-2 per mm. On 7 in BC.

Key to species of *Coriolellus*

1. Context and pore surface whitish; pores not appearing hexagonal 2
1. Context and pore surface brown; pores appearing hexagonal

Coriolellus carbonarius (Berk. et Curt.) Bond. Basidiocarps effused-reflexed, sessile, or resupinate; upper surface light brown; pores 2-3 per mm; hyphal system dimitic, generative hyphae with clamps; basidiospores allantoid, 7-9 x 2.5-3 µm. Brown rot on 2 in AZ.

2. Basidiocarps usually resupinate 3
2. Basidiocarps usually sessile or effused-reflexed 4

3. Pores large, often up to 2 mm in diam

Coriolellus alaskanus (Baxter) comb. nov. (basionym: *Trametes alaskana* Baxter, Mich. Acad. Sci. Arts, Lett. Papers 27:150. 1942). Basidiocarps creamy white when fresh, drying cream to buff; hyphal system trimitic, generative hyphae with clamps; basidiospores cylindric, 7-8 x 2.5-3 µm. Brown rot on 3 in AK; 7 in AK.

3. Pores small, 2-5 per mm

Coriolellus serialis (Fr.) Murr. Upper surface of basidiocarps cream colored or drying to buff; taste bitter anise; pore surface ivory; hyphal system trimitic, generative hyphae with clamps; basidiospores cylindric, 8-11 x 2.5-4 µm. Brown rot on 2 in AT, AZ, BC, CO, ID, MT, UT: 3 in AK, AT, BC, NWT, QB, SK, YT; 4 in AT, BC, MN, NF, NWT, QB; 5 in CO; 6 in CT, ME, NH, NY, PA; 7 in AK, BC, OR, QB, WA; 9 in AT, MN.

4. Basidiospores mostly more than 10 µm long 5
4. Basidiospores 7-10 µm long

Coriolellus variiformis (Pk.) Sarkar. Upper surface of basidiocarps reddish brown; pore surface white to ivory; pores angular, often becoming daedaloid, 1-2 per mm; hyphal system trimitic, generative hyphae with rare clamps; basidiospores cylindric to ellipsoid, 7-10 x 3-4 µm. Brown rot on 2 in BC, ID, MT, UT; 3 in AK, AT, BC, MB, MN, SK, YT; 4 in MN; 6 in ME, NB, NF, NH, NY, QB, OT, VT; 7 in AK, BC, WA; 9 in AT, NB, NS.

5. Basidiospores 12-14 µm long; pores 1-3 mm in diam

Coriolellus heteromorphus (Fr.) Bond. et Sing. Upper surface of basidiocarps ivory white to pale brownish; pore surface ivory white; hyphal system dimitic, generative hyphae with clamps; basidiospores cylindric, curved near the apiculus, 12-14 x 4-5 µm. Brown rot on 2 in AT, BC, CO, ID; 3 in AK, AT, BC, NB, NS, NWT, YT; 4 in AT, NF, NS; 6 in CT, ME, NH, NY: 7 in AK, BC, WA: 9 in BC, NS.

5. Basidiospores 8-12 µm long; pores 1-2 per mm

Coriolellus sepium (Berk.) Murr. Upper surface of basidiocarps almost white or often pale tan to gray; pore surface pale tan; hyphal system dimitic; generative hyphae with clamps; basidiospores cylindric, 8-12 x 2.5-4 µm. Brown rot on 3 in AK, YT; 6 in CT, ME, NH, NY; 7 in OR; 9 in AT.

Key to species of *Coriolus*

1. Upper surface of basidiocarps distinctly zonate with multicolored zones; upper context separated from lower context by a thin dark layer

Coriolus versicolor (L. ex Fr.) Quél. Basidiocarps thin, sessile, effused-reflexed, or imbricate; zones in shades of gray, blue, reddish brown, and tan; pore surface white to buff; hyphal system trimitic, generative hyphae with clamps; basidiospores cylindric, slightly curved, 5.5-6 x 1.5-2 µm. White rot on 2 in ID, OR, WA; 6 in CT, ME, NH, NY; 7 in AK, CA, OR, WA; 9 in NB, PA.

1. Upper surface of basidiocarps azonate; upper context not separated from lower context by a thin dark layer

Coriolus pubescens (Schwm. ex Fr.) Quél. Basidiocarps sessile, dimidiate, often imbricate; upper surface whitish to yellowish; pore surface whitish; hyphal system trimitic, generative hyphae with clamps; basidiospores cylindric, slightly curved, 4.5-7.5 x 2-3 µm. White rot on 2 in MT; 3 in BC.

Key to species of *Fomitopsis*

1. Context and pore surface rose colored 2
1. Context and pore surface white or pale buff, not rose colored . 3
   2. Basidiocarps usually ungulate; basidiospores straight, 5-8 x 2-3 µm

Fomitopsis rosea (Alb. et Schw. ex Fr.) Karst. Upper surface of basidiocarps rose colored at first, becoming purplish brown to blackish, frequently covered by a rimose crust; hyphal system dimitic, generative hyphae with clamps; basidiospores oblong-ellipsoid to subcylindric. Brown rot on 2 in AZ, BC, CO, ID, MT, NM, UT; 3 in AK, BC, NB, NWT, OT, QB, SK, YT; 4 in MN, NB; 5 in CO; 6 in CT, ME, NB, NH, NS, NY; 7 in WA; 9 in MN, NB, NS, NY, PA, PEI.

   2. Basidiocarps usually applanate; basidiospores curved, 5-8 x 1.5-2.5 µm

Fomitopsis cajanderi (Karst.) Kotl. et Pouz. Basidiocarps sessile or somewhat effused-reflexed, occasionally imbricate; upper surface sometimes sulcate, brownish pink, grayish to blackish in older parts; hyphal system dimitic; generative hyphae with clamps. White rot on 2 in AT, AZ, BC, ID, MT; 3 in AT, BC, NB, NS, MB, NH, SK, NWT; 4 in AT, MN, NB, OT; 6 in NB, NY; 7 in OR, WA; 9 in MN, NB, NS, NY, PA, PEI.

3. Context tough-corky; tissue not bitter 4
3. Context chalky and crumbly; tissue bitter

Fomitopsis officinalis (Vill. ex Fr.) Bond. et Sing. Basidiocarps ungulate to columnar; upper surface white to buff, becoming rimose; pore surface whitish; hyphal system dimitic; generative hyphae with clamps; gloeoplerous hyphae present; basidiospores ovoid, 4-7 x 3-3.5 µm. Brown rot on 2 in BC, ID; 4 in MN; 7 in AK, BC, OR, WA.

4. Basidiocarps usually sessile, applanate to ungulate; generative hyphae with clamps; basidiospores cylindric

Fomitopsis pinicola (Swartz ex Fr.) Karst. Upper surface of basidiocarps brownish, blackish, or reddish, often with a bright reddish, resinous margin; pore surface cream colored; hyphal system dimitic; cystidia hyphoid; basidiospores 6.5-7.5 x 3-4 µm. Brown rot of 2 in AZ, BC, CO, ID, MT, OR, UT, WY; 3 in AK, AT, BC, MB, NS, NWT, OT, SK, YT; 4 in MN, NB, NS, NWT, OT, QB, WS; 5 in CO; 6 in CT, ME, NB, NH, NS, NY, TN; 7 in AK, BC, OR, WA; 9 in BC, NB, NS, NWT, PEI.

4. Basidiocarps usually resupinate or effused-reflexed, rarely sessile; generative hyphae simple-septate; basidiospores subglobose

Fomitopsis annosa (Fr.) Karst. Upper surface of basidiocarps crustlike, brownish with age, indistinctly zonate and sulcate; pore surface cream colored; hyphal system dimitic; basidiospores 4-4.5 x 3-4.5 µm. White pocket rot of 2 in ID, NM, OR, WA; 3 in BC, MN; 6 in ME, VT; 7 in AK, BC, CA, OR, WA.

Key to species of *Ganoderma*

1. Basidiocarps annual, context pale brownish to ivory; upper surface usually appearing varnished 2
1. Basidiocarps perennial; context purplish brown to reddish brown; upper surface usually dull

Ganoderma applanatum (Pers. ex Wallr.) Pat. Basidiocarps sessile, usually applanate; upper surface usually grayish or grayish black, covered with a hard crust; pore surface white, darkening quickly on bruising; hyphal system trimitic; generative hyphae with clamps; basidiospores ellipsoid, truncate at one end, 6.5-8.5 x 4.5-6 µm. White mottled rot of 2 in ID; 3 in BC; 7 in AK, BC, CA, WA; 9 in NS.

2. Pileus not more than 5 cm thick; basidiospores 9-11 x 6-8 µm

Ganoderma tsugae Murr. Basidiocarps up to 30 cm wide, often centrally to laterally stipitate; tube layers up to 1 cm thick. White rot of 9 in NS.

2. Pileus typically 7-12 cm thick; basidiospores 10-16 x 7-9 µm

Ganoderma oregonense Murr. Basidiocarps becoming .75 m or more wide, usually sessile; tube layers up to 2 cm thick. White rot of 7 in AK, BC, OR, WA.

Key to species of *Gloeophyllum*

1. Upper surface of basidiocarps usually zonate, often with bright yellowish or reddish brown zones; context often up to 3-4 mm thick

Gloeophyllum saepiarium (Wulf. ex Fr.) Karst. Basidiocarps effused-reflexed to sessile, occasionally resupinate; hyphal system

dimitic, generative hyphae with clamps; cystidia cylindric, smooth or sparsely incrusted; basidiospores cylindric, 8-11 x 3-3.5 µm. Brown rot on 2 in AT, AZ, CO, ID, MT, NM, VT, WA, WY; 3 in AK, AT, BC, ME, NB, NS, NY, NWT, OT, PEI, VT, YT; 4 in AT, BC, MN, NB, NY, NWT, OT; 5 in AZ; 6 in CT, ME, NH, NS, NY; 7 in AK, BC, OR, WA; 9 in AT, NB, NF, NS, PEI.

1. Upper surface of basidiocarps azonate or indistinctly zonate, dull brown; context seldom more than 1 mm thick

Gloeophyllum trabeum (Pers. ex Fr.) Murr. Basidiocarps sessile, effused-reflexed, or sometimes resupinate; hyphal system dimitic, generative hyphae with clamps; cystidia cylindric, smooth; basidiospores cylindric, 7.5-9 x 3-3.5 µm. Brown rot on 6 in CT, ME, NH, NY; 9 in NY, PA.

Key to species of *Hirschioporus*

1. Hymenophore poroid or becoming hydnaceous

Hirschioporus abietinus (Dicks. ex Fr.) Donk. Basidiocarps usually effused-reflexed, sometimes sessile or resupinate; pilei solitary or imbricated; upper surface grayish, hirsute; context duplex, upper layer whitish, soft, lower layer buff, corky; hyphal system dimitic, generative hyphae with clamps; basidiospores cylindric, 6-7.5 x 2.5-3 µm. White rot on 2 in AZ, CO, ID, MT, OR, VT, WA, WY; 3 in AK, AT, BC, ME, NB, NS, NWT, OT, PEI, YT; 4 in NB, NF, NS, NWT, OT, PEI, QB; 6 in CT, ME, NB, NH, NS, NY, PA; 7 in AK, BC, WA; 9 in BC, NB, NS, OT, PEI.

1. Hymenophore strongly lamellate

Hirschioporus laricinus (Karst.) Teramoto. Basidiocarps effused-reflexed or resupinate; upper surface tan to gray, hirsute, faintly zonate; context pale purplish brown; hyphal system dimitic, generative hyphae with clamps; basidiospores allantoid, 6-7 x 2-2.5 µm. White rot on 6 in NY.

Key to species of *Phaeolus*

1. Basidiocarps effused-reflexed or resupinate; pore surface and context bright orange 2
1. Basidiocarps stipitate to sessile; context brownish; pore surface greenish-brown when fresh

Phaeolus schweinitzii (Fr.) Pat. Pilei solitary or imbricate, circular or irregularly lobed; upper surface yellowish brown when fresh, drying to dark reddish brown, tomentose to hirsute, faintly zonate; hyphae simple-septate, brownish in KOH solution; cystidia cylindric, yellowish; basidiospores ellipsoid to ovoid, 6-9 x 3.5-5 µm. Brown cubical root and butt rot on 2 in AZ, ID, MT, OR; 3 in BC, MB, NB, NS, NWT, OT; 4 in MN, OT; 6 in MA, ME, NY, VT; 7 in AK, BC, CA, OR, WA; 9 in NB, NS, PEI.

2. Pores 1 mm or more in diam; basidiospores 10-14 µm long

Phaeolus alboluteus (Ell. et Ev.) Pilát. Basidiocarps effused-reflexed or commonly resupinate, often effused for several feet, developing in early spring in snow and deteriorating rapidly after snow melts; upper surface soft and spongy; hyphae simple-septate; cystidia abundant, cylindric, projecting up to 80 µm; basidiospores cylindric, 10-14 x 3-4 µm. Brown rot on 2 in AZ, BC, CO, ID, MT, OR, UT, WA, WY; 3 in AK, BC; 4 in MI, 5 in AZ; 6 in NY; 7 in AK, BC, WA; 9 in AT.

2. Pores 2-3 per mm; basidiospores 5-6 µm long

Phaeolus fibrillosus (Karst.) Bourd. et Galz. Basidiocarps usually pileate; hyphae simple-septate; cystidia not abundant, cylindric; basidiospores oblong-ellipsoid, 4-5 x 2.5-3 µm. Brown rot on 2 in ID, MT, OR; 3 in AK, BC; 4 in MN; 6 in NC, NY; 7 in AK, BC, OR, WA; 9 in NC.

Key to species of *Polyporus*

1. Hyphal system dimitic or trimitic; surface of basidiocarps not hispid or scurfy 2
1. Hyphal system monomitic; upper surface of basidiocarps grayish to purplish brown, usually hispid or scurfy

Polyporus hirtus Quél. Pores 1-2 per mm; hyphal system monomitic; hyphae thin-walled, abundantly nodose-septate; basidiospores fusiform, 13-17 x 4.5-5.5 µm. White rot of 2 in AZ; 3 in BC; 6 in NF; 9 in AZ.

2. Upper surface of basidiocarps ochraceous to dark chestnut brown, not striate 3
2. Upper surface of basidiocarps pale brownish with light colored radial striations

Polyporus varius Pers. ex Fr. Basidiocarps centrally to laterally stipitate, up to 10 cm wide; basidiospores 7-12 x 3-4 µm. White rot of 2 in ID; 3 in AT.

3. Basidiocarps lignicolous, on wood above ground; upper surface glabrous 4
3. Basidiocarps terrestrial, on buried wood; upper surface finely velvety

Polyporus melanopus Fr. Basidiocarps centrally stipitate; stipe velvety above black base; basidiospores 8-12 x 3.5-4 µm. White rot of 2 in MT.

4. Upper surface of basidiocarps pale tan to dull tan, weathering to white

Polyporus elegans Bull. ex Fr. Basidiocarps centrally to laterally stipitate, up to 5 cm wide; basidiospores 6-10 x 2.5-3.5 µm. White rot of 3 in AT, BC; 9 in NWT.

4. Upper surface of basidiocarps light chestnut brown to blackish

Polyporus picipes Fr. Basidiocarps centrally to laterally stipitate, often lobed or imbricate and growing in clusters, up to 15 cm wide; basidiospores 6-8 x 3-4 µm. White rot of 7 in AK, BC.

Key to species of *Poria*

1. Hyphal system monomitic 2
1. Hyphal system dimitic or trimitic 20
2. Hyphae with clamp connections 3
2. Hyphae simple-septate 13
3. Pore surface lavender or yellow 4
3. Pore surface white to cream colored 5
4. Margin with yellow rhizomorphs; pore surface pale yellow

Poria albolutescens (Rom.) Egeland. Basidiospores oval to ellipsoid, 3.5-5 x 2.5-3 µm, amyloid in Melzer's reagent. Brown rot of 2 in CO.

4. Margin not rhizomorphic; pore surface variable in color, lavender to pale yellow

Poria bombycina (Fr.) Cke. Basidiospores broadly ellipsoid, 5-8 x 3-5 µm, weakly amyloid in Melzer's reagent. Brown rot of 2 in CO; 9 in AT, BC.

5. Basidiospores ellipsoid to subglobose 6
5. Basidiospores cylindrical 10
6. Basidiocarps not rhizomorphic 7
6. Basidiocarps rhizomorphic 9
7. Basidiospores hyaline; spore print white 8
7. Basidiospores becoming brown at maturity; spore print brown

Poria incrassata (Berk. et Curt.) Burt. Pore surface buff, becoming grayish brown in drying; basidiospores narrowly to broadly ellipsoid, negative in Melzer's reagent, 7-13 x 4.5-6.5 µm. Brown rot of 9 in NB.

8. Capitately incrusted cystidia present

Poria sericeomollis (Rom.) Egeland. Basidiospores oblong to cylindric-ellipsoid, 4-5 x 2.2.5 µm; taste bitter. Brown cubical rot of 2 in BC, MT; 3 in BC; 6 in NB; 7 in BC.

8. Capitately incrusted cystidia not present

Poria rivulosa (Berk. et Curt.) Cke. Fusoid cystidioles present; basidiospores ovoid to subglobose, 4.5-6 x 3.5-5 µm. White laminated rot of 3 in BC; 7 in BC.

9. Basidiospores amyloid in Melzer's reagent, oblong to ovoid, 3-5 x 2.5-3.5 µm

Poria myceliosa Pk. Pores angular, 1-4 per mm. White rot of 5 in CO; 7 in BC.

9. Basidiospores negative in Melzer's reagent, ovoid to subglobose, 2.5-3.5 x 2-2.5 µm

Poria mollusca (Pers. ex Fr.) Cke. Pores circular to daedaloid, usually 4-7 per mm. White rot of 7 in BC.

10. Basidiospores allantoid, 1-1.5 µm wide 11
10. Basidiospores straight, 2-3 µm wide 12

11. Cystidia lacking

Poria subvermispora Pilát. Pore surface white to cream colored; pores 2-4 per mm; tubes drying brittle; taste bitter. Brown rot of 2 in CO.

11. Capitately incrusted cystidia present in hymenium

Poria simani (Pilát) Gilbn. et Lowe. Pore surface cream colored; tubes drying soft and fragile; cystidia cylindric, 3-4 µm in diam. Brown rot of 9 in AZ.

12. Basidiospores 7-11 x 2-3 µm

Poria mappa Overh. et Lowe. Basidiocarps often less than 1 mm thick; pore surface cream colored; pores 3-4 per mm. White rot of 4 in AK.

12. Basidiospores 4-6 x 2-2.5 µm

Poria monticola Murr. Basidiocarps up to 3 mm thick; pore surface cream colored to buff; pores 2-4 per mm. Brown cubical rot of 2 in CO, ID; 7 in BC, OR.

13. Pore surface pinkish brown, rose colored or dark purplish . . . 14
13. Pore surface white to cream colored 18
14. Basidiocarps thin, soft; basidiospores narrowly allantoid or cylindric-ellipsoid 15
14. Basidiocarps thin to thick; basidiospores ovoid to subglobose 16

15. Pore surface rose colored; tube layer not distinctly separated from subiculum; basidiospores cylindric-ellipsoid

Poria tarda (Berk.) Cke. Tubes arising as isolated cupules; subicular hyphae thin-walled, 3-6 µm in diam; basidiospores 4-5 x 2-2.5 µm. White rot of 3 in BC.

15. Pore surface becoming purple; tube layer purple, distinctly separated from white, cottony subiculum, basidiospores narrowly allantoid

Poria taxicola (Pers. ex Fr.) Bres. Tubes often developing in scattered areas over a white subiculum; hymenium continuous over edges of dissepiments; cylindric cystidioles present; basidiospores 4-6 x 1-1.5 µm. White rot of 2 in CO, ID, WA.

16. Basidiocarps not rhizomorphic, drying horny; pores 4-8 per mm 17
16. Basidiocarps rhizmorphic, drying soft and byssoid; pores 2-3 per mm

Poria terrestris (DC ex Fr.) Cke. Pore surface yellow, pinkish or blue; some clamp connections present but most hyphae simple-septate; basidiospores 4-5 x 3-4 µm. Undetermined rot of 2 in AZ; 3 in AT; 9 in AT.

17. Basidiocarps white, drying pinkish; basidiospores 5-6 x 4-5 µm

Poria vitrea (Pers. ex Fr.) Cke. Basidiocarps annual; basidia 12-17 x 5-7 µm; basidiospores 5-6 x 4-5 µm. White pocket rot of 9.

17. Basidiocarps pinkish, drying pale brown to dark blackish brown; basidiospores 4-5.5 x 3-4 µm

Poria nigrescens Bres. Basidiocarps perennial; basidia 17-20 x 10-12 µm; basidiospores 3.5-5 x 3.5-5 µm. White stringy rot of 7 in BC.

18. Incrusted cystidia present; basidiospores broadly ellipsoid to ovoid 19
18. Cystidia lacking; basidiospores allantoid

Poria reticulata (Pers. et Fr.) Cke. Basidiocarps thin, annual, usually effused in small patches; hymenial surface cupulate at first; basidiospores 7-9.5 x 2-3.5 µm. White rot of 2 in CO; 7 in WA.

19. Basidiospores ovoid to broadly ellipsoid, 5-9 x 3-4 µm

Poria corticola (Fr.) Cke. Pores 1-3 per mm; subicular hyphae thin- to thick-walled, 2-5 µm in diam. White rot of 8 in CH.

19. Basidiospores ovoid to broadly ellipsoid, 4-5 x 2.5-3 µm

Poria similis Bres. Pores 4-6 per mm; subicular hyphae thin- to thick-walled, 2-4 µm in diam. White rot of 7 in BC.

20. Thick-walled, incrusted skeletocystidia present 21
20. Cystidia absent, cystidioles present in some species . . 24
21. Basidiospores ellipsoid to subglobose 22
21. Basidiospores cylindric 23
22. Basidiocarps rhizomorphic; pores 2-5 per mm

Poria radula (Pers. ex Fr.) Cke. Pore surface cream colored to pale buff; generative hyphae with clamps; basidiospores 3.5-4 x 2-3 µm. White rot of 6 in ME.

22. Basidiocarps not rhizomorphic; pores 6-8 per mm

Poria eupora (Karst.) Cke. Pore surface pinkish buff to vinaceous; generative hyphae with clamps; basidiospores 4-4.5 x 2-2.5 µm. White rot of 6 in NY.

23. Pore surface cream colored

Poria luteoalba (Karst.) Sacc. Subiculum cream colored to pale buff; generative hyphae with clamps; basidiospores cylindric, straight or slightly curved, 4-6 x 1.5-2 µm. White pitted and laminated rot of 6 in NH; 9 in QB.

23. Pore surface brownish pink

Poria rixosa (Karst.) Karst. Subiculum pinkish buff; generative hyphae with clamps; basidiospores allantoid, 4-6 x 1.5-2 µm. White laminated rot of 2 in MT; 3 in BC, OT, SD; 4 in MN; 6 in NH, NY; 9 in NY.

24. Basidiospores subglobose to ellipsoid 25
24. Basidiospores oblong to cylindric, straight or allantoid 26
25. Basidiocarps perennial, tough-fibrous, pore surface yellowish

Poria subacida (Pk.) Sacc. Hyphal system trimitic; tramal and subicular tissue dextrinoid in Melzer's reagent; generative hyphae with clamps, slender binding hyphae abundant, 1-2 µm in diam; basidiospores 4.5-6.5 x 3-4.5 µm; cream colored to golden yellow mycelial felts present in decayed wood. White stringy rot of 2 in ID, MT, OR, WA; 3 in BC, ME, NB, OT; 4 in MB, NF, NS, OT; 6 in CT, ME, NB, NH, NS, NY, VT; 7 in AK, BC, OR, WA; 9 in AK, NS.

25. Basidiocarps annual, tubes and subiculum soft; pore surface white to cream colored

Poria vaillantii (DC. ex Fr.) Cke. Margin often with white rhizomorphs; hyphal system dimitic; generative hyphae with clamps; basidiospores 5-8 x 3-4 µm. Brown cubical rot of 7 in WA.

26. Basidiospores cylindric, straight or allantoid 27
26. Basidiospores oblong, 3.5-4 x 2-2.5 µm

Poria romellii Donk. Basidiocarps annual; pore surface cream colored to pale buff, the pores 6-8 per mm; hyphal system dimitic, generative hyphae with clamps; hyphal pegs present. White rot of 2 in CO; 3 in NWT; 9 in AT.

27. Subiculum uniform in color 28
27. Subiculum cream colored to buff with a dark brown layer next to the substratum

Poria albobrunnea (Rom.) Baxt. Pore surface white to cream colored, becoming reddish brown on age or drying; hyphal system dimitic; generative hyphae with clamps; basidiospores allantoid, 5-7 x 1.5-2 µm. Brown cubical rot of 3 in AK, YT; 7 in OR.

28. Pore surface bright yellow, sometimes fading on age or drying 29
28. Pore surface white to cream colored or buff, never bright yellow 30

29. Basidiocarps perennial; pores about 1-5 per mm

Poria alpina Litsch. Subiculum chalky when dry, up to 2 mm thick tube layer up to 1.5 cm thick. Brown cubical rot of 2 in MT; 3 in AT.

29. Basidiocarps annual; pores 5-7 per mm.

Poria xantha (Fr.) Cke. Subiculum chalky when dry, up to 3 mm thick; tube layer up to 3 mm thick. Brown cubical rot of 2 in MT; 3 in AK, AT, BC, NF, NWT, YT; 4 in AK, NWT; 6 in ME; 7 in BC; 9 in AT, BC.

30. Basidiospores cylindric, straight or allantoid; basidiocarps firm 31
30. Basidiospores lunate; basidiocarps soft, byssoid

Poria lenis (Karst.) Sacc. Basidiocarps annual, pores often sinuous in age, 4-7 per mm; basidiospores 3.5-4.5 x 1-1.5 µm. White rot of 2 in ID, MT; 3 in AK; 7 in AK, CA, OR; 9 in MN.

31. Hyphae at dissepiment edges incrusted 32
31. Hyphae at dissepiment edges not incrusted 33
32. Basidiocarps perennial, becoming thick

Poria stellae Pilát. Pores 5-7 per mm; margin fimbriate; fusoid cystidioles present; basidiospores allantoid, 4.5-6 x 0.7-1 µm. White rot of 2 in CO, MT; 4 in NF; 9 in AT, BC.

32. Basidiocarps annual, thin

Poria subincarnata (Pk.) Murr. Pore surface creamy white with pinkish cast when fresh; margin fimbriate or sometimes rhizomorphic; fusoid cystidioles present; basidiospores allantoid, 4-6.5 x 1-1.5 µm. White rot of 2 in AT, AZ; 3 in AK, AT, BC; 4 in AT; 7 in BC; 9 in AT, NS.

33. Pore surface cream colored to buff 34
33. Pore surface becoming cinereous

Poria cinerascens (Bres.) Sacc. et Syd. Basidiocarps annual, tough-fibrous; hyphal system trimitic; hyphal pegs present; basidiospores cylindric, slightly curved, 5-7 x 1.5-2 µm. White rot of 2 in AT, AZ, MT, OR; 3 in AK; 6 in CT, ME, NH, NY; 7 in AK; 9 in AT, MN, NS.

34. Basidiospores straight or narrowly allantoid 35
34. Basidiospores broadly allantoid

Poria crustulina Bres. Basidiocarps annual; pores angular, 3-4 per mm; hyphal pegs present; basidiospores 7-8 x 2.5-3 µm. White rot of 2 in AZ, BC, CO, ID, MT, WA, WY; 3 in AK, AT, BC, NWT, YT; 4 in AK, NF, NS; 6 in NS; 7 in AK, MT, WA; 9 in NS, BEI.

35. Pores 2-3 per mm 36
35. Pores 4-6 per mm 37
36. Basidiospores 4-5.5 x 1.5-2 µm, allantoid

Poria sinuosa (Fr.) Cke. Basidiocarps annual; pores 2-4 per mm. Brown cubical rot of 2 in AZ, CO, MT; 3 in AK, BC; 4 in NS.

36. Basidiospores 5-5.5 x 2-2.5 µ, short-cylindric to oblong, straight

Poria carbonica Overh. Basidiocarps annual, tough-corky; pores 3-5 per mm; tube layer up to 1 cm thick; hyphal system trimitic; skeletal hyphae amyloid in Melzer's reagent. Brown cubical rot of 2 in AZ, ID; 7 in BC.

37. Basidiospores cylindric to oblong 38
37. Basidiospores narrowly allantoid

Poria odora (Pk.) Sacc. Basidiocarps annual, drying cartilaginous; strong garlic like odor from fresh basidiocarps and rot; pores 4-6 per mm; fusoid cystidioles present; basidiospores 5-6.5 x 1-1.5 µm. Brown rot of 3 in AK, YT.

38. Basidiocarps chalky; margin not distinctive

Poria oleagina Overh. Basidiocarps perennial; becoming crumbly, chalky; pores 4-6 per mm; fusoid cystidioles present; basidiospores short cylindric to oblong, 3.5-5 x 1.5-2 µm. Brown cubical rot of 4 in MN; 7 in BC; 9 in MN.

38. Basidiocarps cheesy; margin often reddish and resinous

Poria sitchensis Baxt. Basidiocarps annual; with strong sweet odor when fresh; pores 4-7 per mm; taste resinously bitter; tramal hyphae weakly amyloid in Melzer's reagent; fusoid cystidioles present; basidiospores 4-5 x 1.5-2 µm. Brown cubical rot of 2 in MT; 4 in AT; 7 in AK, CA, OR.

Key to species of *Tyromyces*

1. Hyphal system of context or trama dimitic or trimitic; associated with white rot 2
1. Hyphal system monomitic; associated with brown rot 4
2. Skeletal hyphae present in trama; context monomitic . . . 3
2. Skeletal hyphae present in context

Tyromyces semipileatus (Pk.) Murr. Basidiocarps resupinate, effused-reflexed, or sessile; upper surface white or cinereous when fresh, drying grayish to yellowish; pore surface white to cream colored, glancing; pores 8-10 per mm; basidiospores allantoid, 3-4 x 0.5-1 µm. White rot on 9 in OT.

3. Basidiospores allantoid; usually on hardwoods, rarely on conifers

Tyromyces albellus (Pk.) Bond. et Sing. Basidiocarps sessile or effused-reflexed; upper surface white, becoming yellowish to light gray, pellicular; pore surface white to pale buff, glancing; pores 6-7 per mm; basidiospores allantoid, 4-6 x 1.5-2.5 µm. White rot of 4 in NB.

3. Basidiospores broadly ovoid to subglobose; known only on conifers

Tyromyces canadensis (Overh.) Lowe. Basidiocarps usually sessile; upper surface white to mousy gray; pore surface white to light buff; pores 6-9 per mm; basidiospores 2.5-3.5 x 2-2.5 µm. White rot of 3 in MN.

4. Hyphae with clamp connections 5
4. Hyphae simple-septate

Tyromyces mollis (Pers. ex Fr.) Kotl. et Pouz. Basidiocarps sessile, effused-reflexed or resupinate; upper surface pale purplish brown, glabrous, becoming rugose; pore surface pale pinkish brown, basidiospores allantoid, 4.5-5.5 x 1- 1.5 µm. Brown rot of 2 in AZ; 3 in AT.

5. Basidiospores negative in Melzer's reagent 6
5. Basidiospores dextrinoid in Melzer's reagent

Tyromyces kravtzevianus Bond. et Parm. in Parm. Basidiocarps narrowly reflexed or often resupinate; upper surface whitish, becoming blotched with reddish brown on drying; basidiospores ellipsoid to short-cylindric, 5-6 x 2.5-3 µm. Brown rot of 4 in QB; 3 in SK; 9 in NB.

6. Cystidia lacking 7
6. Fusoid cystidia present in hymenium

Tyromyces balsameus (Pk.) Murr. Basidiocarps sessile or effused-reflexed, solitary or imbricate, dimidiate or laterally fused and elongated; upper surface whitish to pale brownish, faintly zonate; pore surface whitish, becoming pale brownish on drying; cystidia numerous, often incrusted; basidiospores ovoid to ellipsoid, 3.5-4.5 x 2.5-3 µm. Brown rot of 2 in CO, ID; 3 in AT, BC, NB, OT; 4 in OT; 7 in AK, BC, WA; 9 in NS.

7. Basidiocarps white to rufescent, not with blue tints 8
7. Basidiocarps whitish with a blue or grayish blue cast

Tyromyces caesius (Schrad. ex Fr.) Murr. Basidiocarps sessile or effused-reflexed, solitary, dimidiate or narrow and shelf-like; basidiospores cylindric to allantoid, 4.5-6 x 1-1.5 µm. Brown rot of 2 in AZ; 3 in AT, BC, CA, NWT, YT; 4 in AK; 6 in CT, ME, NH, NY; 7 in AK, CA; 9 in CA.

8. Basidiocarps without shallow, circular depressions on upper surface 9
8. Basidiocarps with shallow, circular depressions on upper surface

Tyromyces guttulatus (Pk.) Murr. Basidiocarps sessile to substipitate, dimidiate to flabelliform, applanate; upper surface white to pale buff; pore surface white to cream colored; tissues with a bitter taste; hyphae thin- to thick-walled, all with clamps; some thin-walled gloeoplerous hyphae with occasional distorted clamps also present; small fusoid cystidioles present; basidiospores short-cylindric, 4-5 x 2-2.5 µm. Brown rot of 3 in MN; 4 in MN; 7 in BC, WA; 9 in NY, PA, WA.

9. Tissue bitter tasting 10
9. Tissue mild, without a bitter taste 11
10. Upper surface of basidiocarps smooth, pellicular, cream colored to mousy gray

Tyromyces tephroleucus (Fr.) Donk. Basidiocarps sessile or effused-reflexed, dimidiate or flabelliform; pore surface white, becoming yellowish on drying; basidiospores cylindric to allantoid, 4-5 x 1-2 µm. Brown rot on 2 in AZ.

10. Upper surface of basidiocarps usually rough, white, with small black spots

Tyromyces immitis (Pk.) Bond. Basidiocarps sessile or effused-reflexed, dimidiate; basidiospores cylindric-ellipsoid, 3.5-5 x 1.5-2 µm. Brown rot of 2 in ID; 3 in NWT, SK; 9 in AZ, MT, NB, OR.

11. Upper surface tomentose to glabrous 12
11. Upper surface cottony, growing down over and partially enclosing pore surface

Tyromyces leucospongia (Cke. et Harkn.) Bond. et Sing. Basidiocarps effused-reflexed or sessile, dimidiate to elongate; upper surface white to pale buff, with a thick layer of soft, cottony tomentum; pore surface cream colored to pale buff; basidiospores allantoid, 4-5 x 1-1.5 µm. Brown rot of 2 in CO, ID, UT, WY; 9 in CA.

12. Basidiocarps white to cream colored, not discoloring on bruising or drying 13
12. Basidiocarps white to cream-colored, staining reddish brown on bruising or drying

Tyromyces fragilis (Fr.) Donk. Basidiocarps sessile or effused-reflexed, dimidiate or elongated; hyphal pegs present; basidiospores allantoid, 4-5 x 1.5-2 µm. Brown rot of 2 in AZ, ID; 4 in MN; 7 in WA; 9 in MN, NY, OR.

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13. Basidiocarps with strongly undulate margins on reflexed portions; pores 2-3 per mm

Tyromyces undosus (Pk.) Murr. Basidiocarps effused-reflexed or occasionally resupinate; upper surface whitish to pale buff; pore surface cream colored; basidiospores allantoid, 4-7 x 1-1.5 µm. Brown rot on 2 in AZ, MT; 6 in ME, NH, NY; 7 in BC, WA.

13. Basidiocarps with level margin on reflexed portions; pores 5-7 per mm

Tyromyces perdelicatus Murr. Basidiocarps sessile or resupinate, dimidiate; upper surface white to light buff, tomentose; pore surface white to light buff; basidiospores cylindric, straight or slightly curved, 4-5.5 x 1-1.5 µm. Brown rot on 2 in AZ, MT.

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